

TECHNICAL INFORMATION



PRODUCT

P 1 / 14

Models No. ▶ HP1620, HP1620F, HP1621, HP1621F

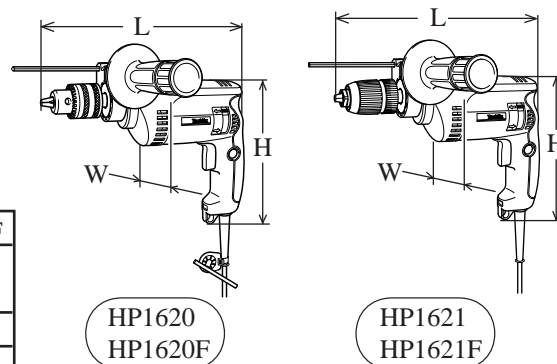
Description ▶ Hammer Drills 16mm (5/8")

CONCEPT AND MAIN APPLICATIONS

The above products are up-grade version of the existing models HP1500 and HP1501.

Their features are as follows.

Model No.	HP1620	HP1620F	HP1621	HP1621F
F/R Change by brush holder unit	○	○	○	○
LED Job Light		○		○
Keyless drill chuck			○	○



Dimensions : mm (")		
Model No.	HP1620(F)	HP1621(F)
Length (L)	303 (11-7/8)	
Height (H)	222 (8-3/4)	
Width (W)	68 (2-11/16)	

► Specification

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output(W)
			Input	Output	
110	6.2	50 / 60	650	380	500
110 for Taiwan	5.4	50 / 60	560	320	500
120	5.7	50 / 60	650	380	500
220	3.1	50 / 60	650	380	600
230	3.0	50 / 60	650	380	600
240	2.9	50 / 60	650	380	600

Model No.		HP1620	HP1620F	HP1621	HP1621F
No load speed : (min -1= rpm)		0 - 2,800			
Blows per min. : (min -1= bpm)		0 - 44,800			
Keyless chuck		No	No	Yes	Yes
Chuck ability : mm (")		1.5 - 13 (1/16 - 1/2)			
Drilling capacity : mm (")	Concrete	16 (5/8)			
	Steel	13 (1/2)			
	Wood	30 (1-3/16)			
F/R Change system		Brush holder unit			
LED Job Light		No	Yes	No	Yes
Protection from electric shock		Double insulation			
Cord length : m (ft)		2.0 (6.6)			
Net weight :Kg (lbs)		1.7 (3.8)			

► Standard equipment

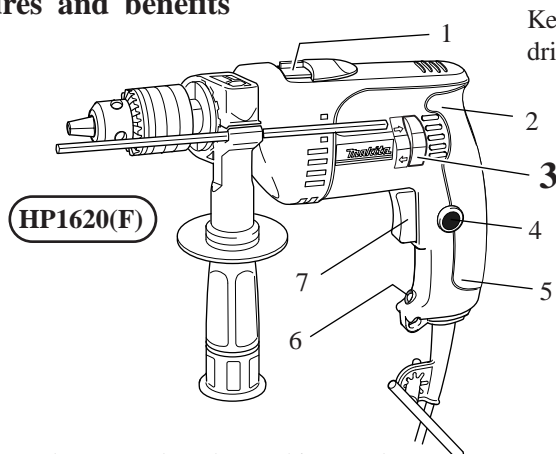
- * Side handle 1 pc.
- * Depth gauge 1pc.
- * Chuck key S-13..... 1 pc. (only for HP1620 and HP1620F)
- * Plastic carrying case 1 pc.

< Note > The standard equipment for the tool shown may differ from country to country.

► Optional accessories

- * T.C.T. Hammer drill bit ø16mm
- * Metal drill bit ø13mm
- * Drill bit for wood ø30mm
- * Keyless drill chuck set
- * Chuck key S-13 (only for HP1620 and HP1620F)
- * Plastic carrying case
- * Depth gauge
- * Drill stand type 43
- * Blow out bulb
- * Drill chuck set
- * Side handle set

► Features and benefits



1. Change lever to select the working mode

Rotation only ↔ Rotation + Percussion

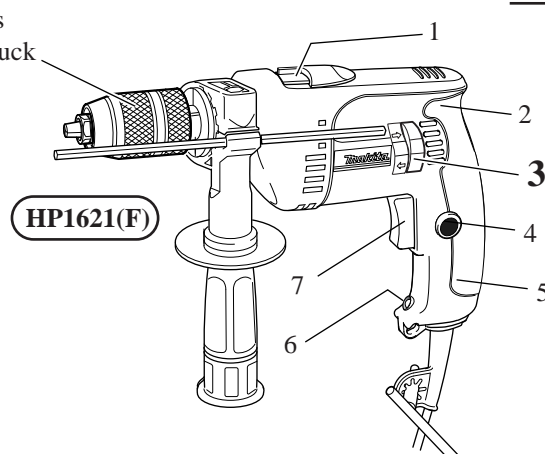
2. In-Line designed handle for efficient transmission of pressure

3. F/R Change system by brush holder unit system provides the following features.

* Extended service life of carbon brush

* Same power even in the reversed rotation

Keyless
drill chuck



4. Lock ON button for continuous operation

5. Palm fitting soft grip for comfortable operation

6. LED Job Light (HP1620F and HP1621F)

7. Big switch trigger

► Comparison of products

Model No.		MAKITA				Competitor A	Competitor B	MAKTEC
Specifications		HP1620 / F	HP1621 / F	HP1500	HP1501	Model A	Model B	MT811
Power input : W		650	650	550	550	600	650	430
Rated amperage in USA. : A		5.7	5.7	5	5	—	—	3.8
Keyless chuck		No	Yes	No	Yes	Yes	Yes	No
Chuck ability : mm (")		1.5 - 13 (1/16 - 1/2)	1.5 - 13 (1/16 - 1/2)	1.5 - 13 (1/16 - 1/2)	1.5 - 13 (1/16 - 1/2)	1.5 - 13 (1/16 - 1/2)	13Max (1/2)	1.5 - 13 (1/16 - 1/2)
No load speed : (min -) rpm		0 - 2,800	0 - 2,800	0 - 2,800	0 - 2,800	0 - 2,800	0 - 2,600	0 - 2,800
Blows per min. : (min -) bpm		0 - 44,800	0 - 44,800	0 - 44,800	0 - 44,800	0 - 50,000	0 - 25,000	0 - 30,800
Capacity	Concrete ; mm (")	16 (5/8)	16 (5/8)	15 (9/16)	15 (9/16)	12 (15/32)	16 (5/8)	13 (1/2)
	Steel ; mm (")	13 (1/2)	13 (1/2)	13 (1/2)	13 (1/2)	10 (3/8)	13 (1/2)	13 (1/2)
	Wood ; mm (")	30 (1-3/16)	30 (1-3/16)	25 (1)	25 (1)	25 (1)	30 (1-3/16)	18 (11/16)
F/R Change	Reverse switch			○	○	○	○	○
	Brush holder unit	○	○					
Variable Switch	Trigger	○	○	○	○			○
	Trigger w/ pre-set dial					○	○	
Soft grip		Yes	Yes	No	No	No	Yes	No
LED Job Light		No / Yes	No / Yes	No	No	No	No	No
Automatic cut-off carbon		No	No	No	No	Yes	No	No
Double insulation		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cord length		2.0 (6.6)	2.0 (6.6)	2.0 (6.6)	2.0 (6.6)	2.5 (8.2)	2.5 (8.2)	2.0 (6.6)
Net weight : kg (lbs)		1.7 (3.7)	1.7 (3.7)	1.7 (3.7)	1.7 (3.7)	1.8 (4.0)	1.65 (3.6)	1.6 (3.5)
Dimensions	Length (L) : mm (")	303 (11-7/8)	303 (11-7/8)	299 (11-3/4)	299 (11-3/4)	273 (10-3/4)	304 (12)	272 (10-3/4)
	Width (W) : mm (")	68 (2-11/16)	68 (2-11/16)	66 (2-5/8)	66 (2-5/8)	60 (2-3/8)	68 (2-11/16)	71 (2-13/16)
	Height (H) : mm (")	222 (8-3/4)	222 (8-3/4)	212 (8-3/8)	212 (8-3/8)	185 (7-1/4)	195 (7-5/8)	194 (7-5/8)
Standard equipment	Side handle	○	○	○	○	○	○	○
	Depth gauge	○	○	○	○	○	○	○
	Chuck key	○		○				○
	Carrying case	○	○	○	○	○	○	

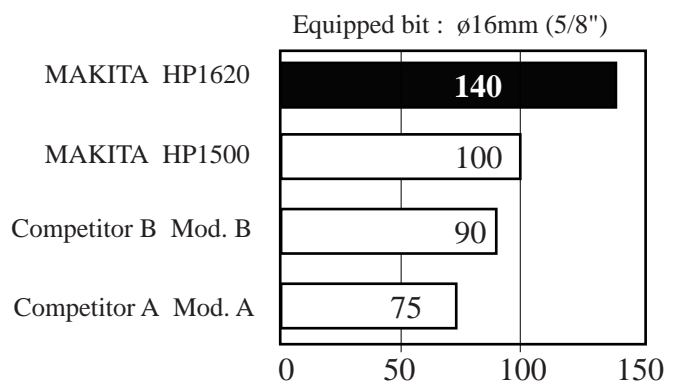
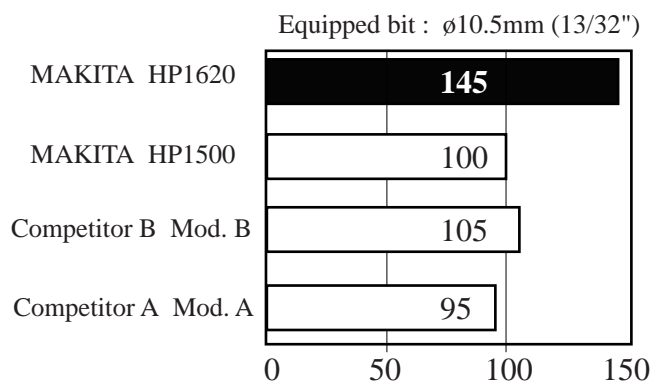
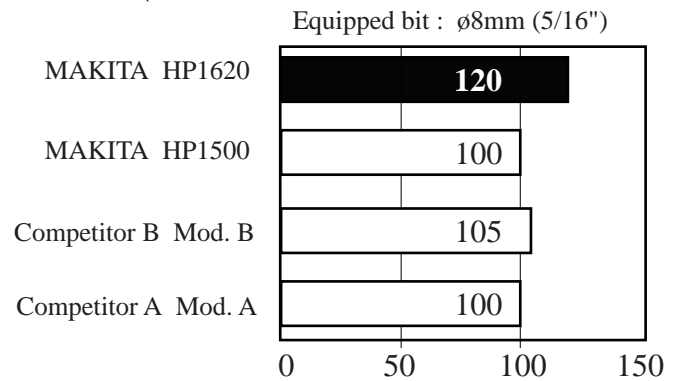
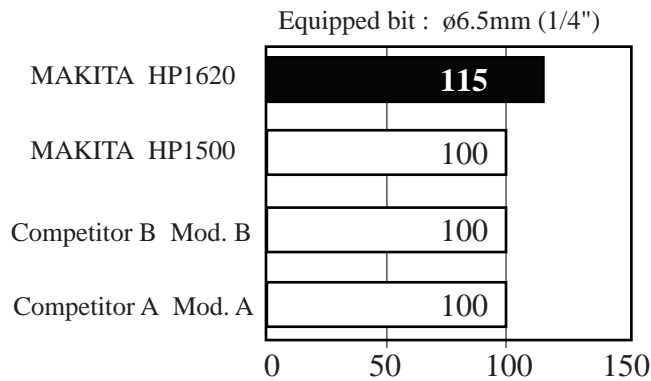
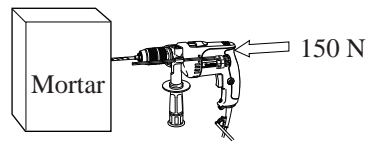
Comparison of working speed with percussion drill mode

Numbers in chart below are relative values when setting HP1500 's capacity as 100.

Conditions

* Material : Mortar

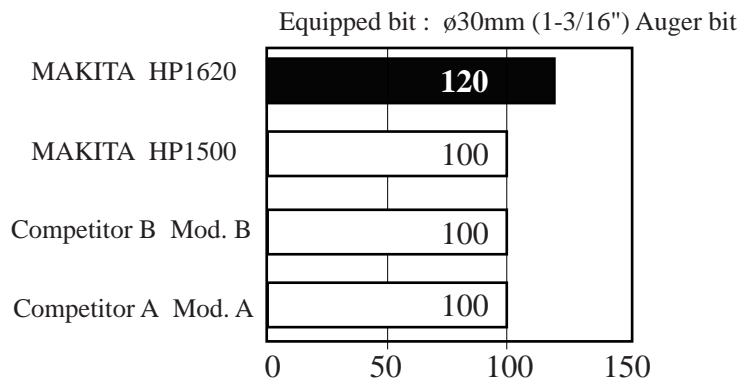
* Pressure loaded to the product : 150 N



Comparison of working speed in wood with drill mode

Conditions

* Material : Douglas fir



< 1 > Lubrication

Apply MAKITA grease N. No.1 to the following portions designated by black triangle to protect parts and product from unusual abrasion.

Position No.	Parts item	Portion to be lubricated	Amount : g (oz)
9	Spindle	The portion where ball bearing 6002LLB contacts, when spindle reciprocates.	0.1 (0.01)
		The portion where steel ball 5.0 contacts.	0.1 (0.01)
13	Helical gear 45	The teeth portion which engages armature gear.	6.0 (0.31)
		The cam portion which contacts the those of cam holder.	1.7 (0.06)
17	Change lever	The whole portion with which steel ball 5.0 is accepted.	0.1 (0.01)

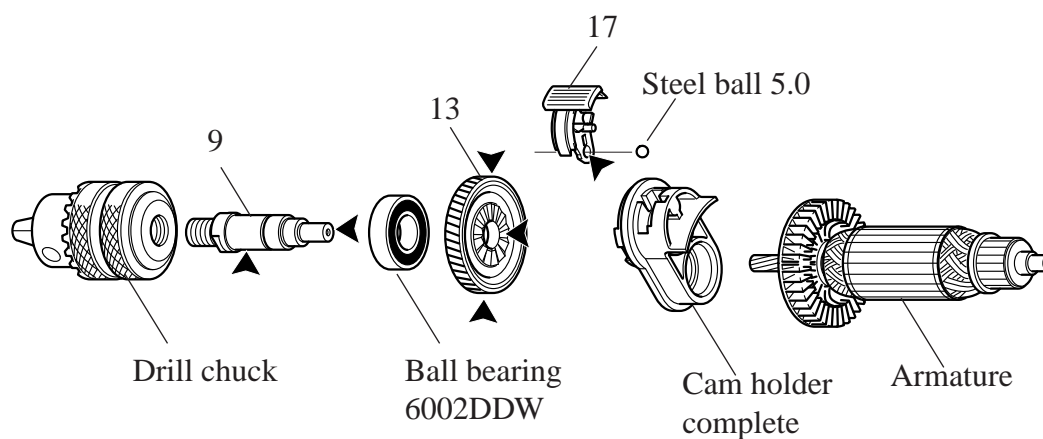


Fig. 1

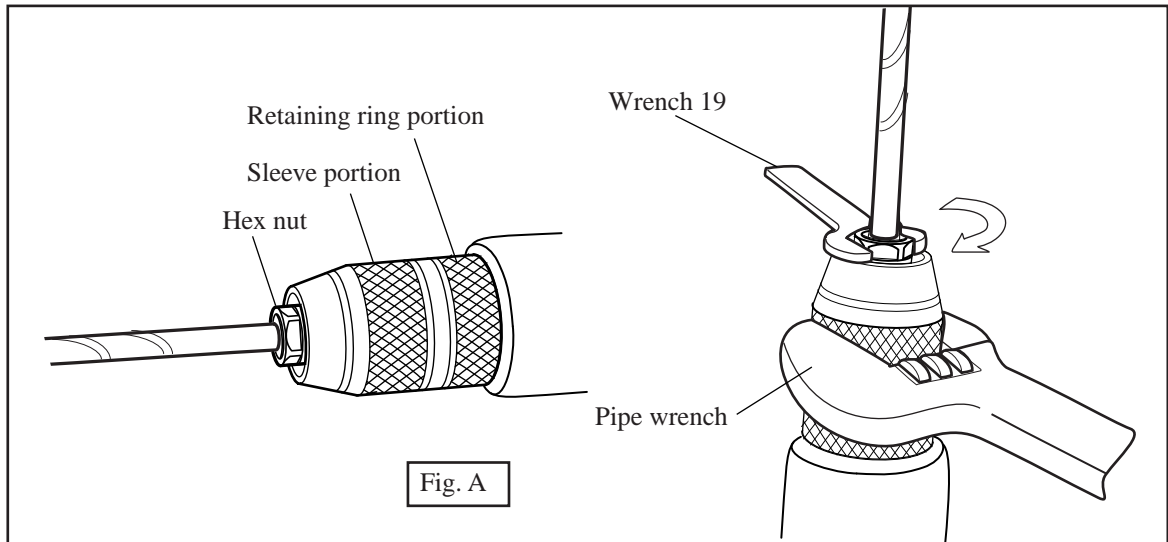
< 2 > Removing drill chuck

Firmly hold No.1R139 "Drill chuck extractor" with vise. And lock spindle with the drill chuck extractor. Holding No.1R298 "hex socket" with drill chuck, and turn the hex socket with No.1R223 "Torque wrench" counter clockwise. So drill chuck can be disassembled from spindle. See Fig. 2.
(Removing keyless drill chuck with trouble)

If the drill bit sticks in keyless drill chuck, it can be difficult to turn the sleeve portion by hand for removing the drill bit.

In this case, turn the hex nut with wrench 19 cluckwise vewing from bit side, while holding the sleeve portion with pipe wrench firmly. So the drill bit can be removed from the keyless drill chuck.

See Fig. A.

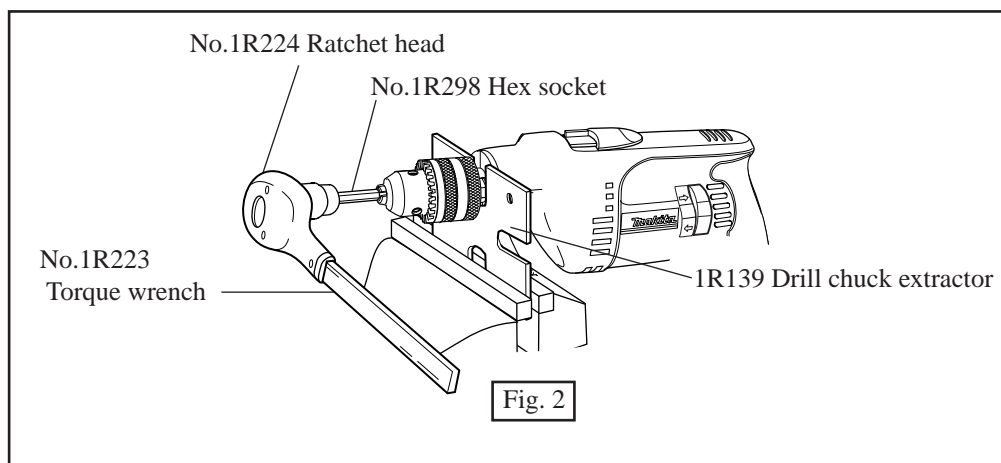


< 3 > Mounting drill chuck

Firmly hold No.1R139 "Drill chuck extractor" with vise. And lock spindle with the drill chuck extractor. Holding No.1R298 "hex socket" with drill chuck, and turn the hex socket with No.1R223 "Torque wrench" clockwise. So drill chuck can be assembled to spindle. See Fig. 2.

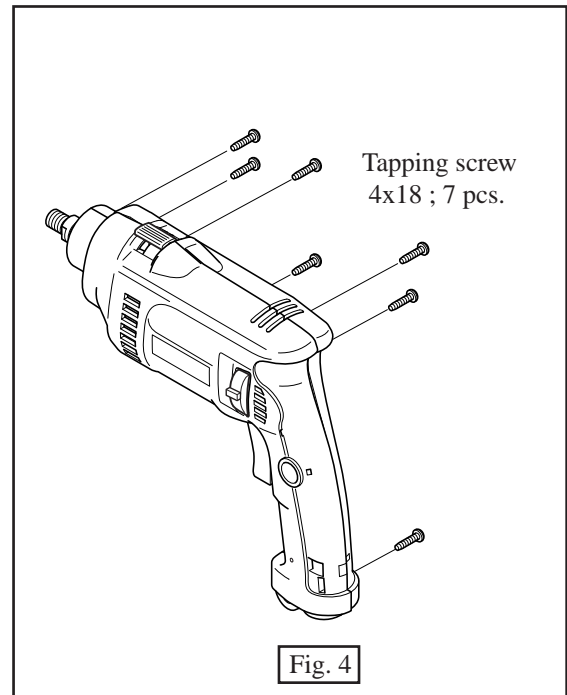
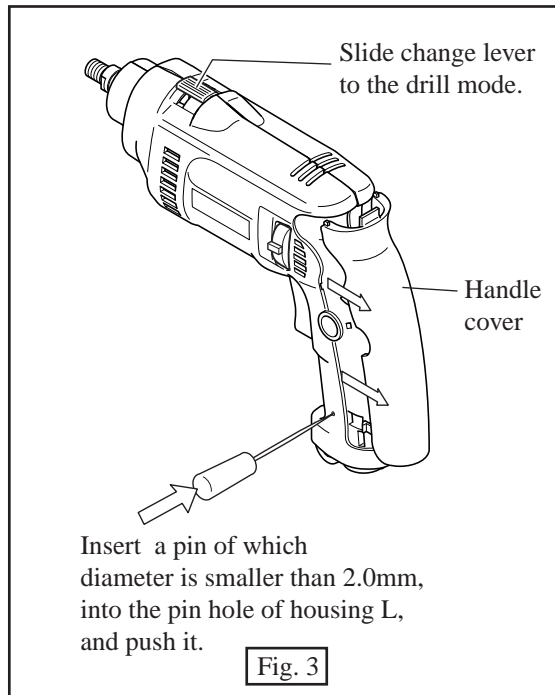
<Note in assembling>

Pre-set the fastening torque of the torque wrench with 35.7 - 45.9 N.m (350 - 450kgf.cm), when assembling.

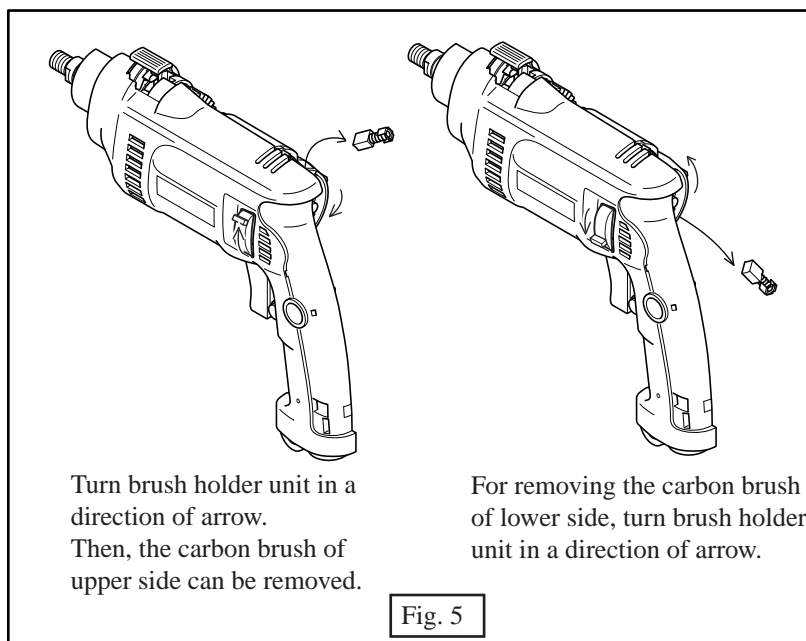


< 4 > Disassembling housing R and L

- (1) Slide change lever to the drill mode. And pull off handle cover, while pushing a pin, inserted into the pin hole of housing L. See Fig. 3.
- (2) Unscrew 7 pcs. of tapping screw 4x18. See Fig. 4. Now housing R can be separated from housing L.

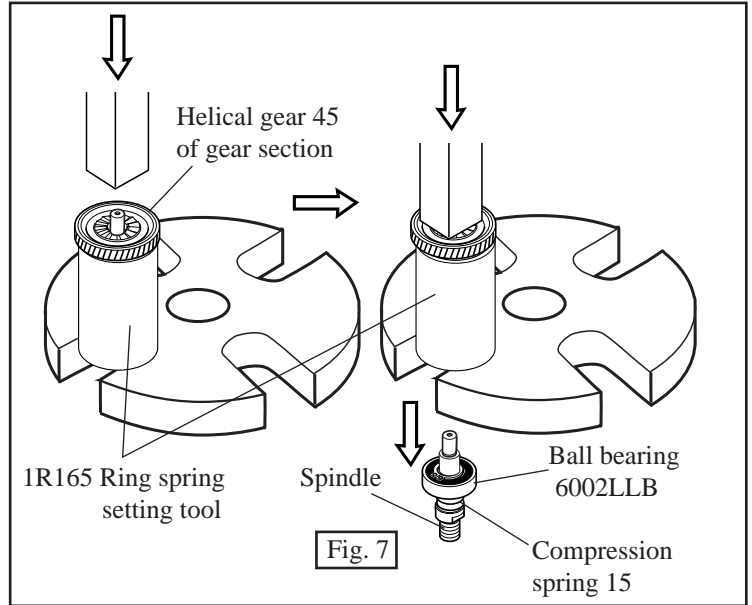
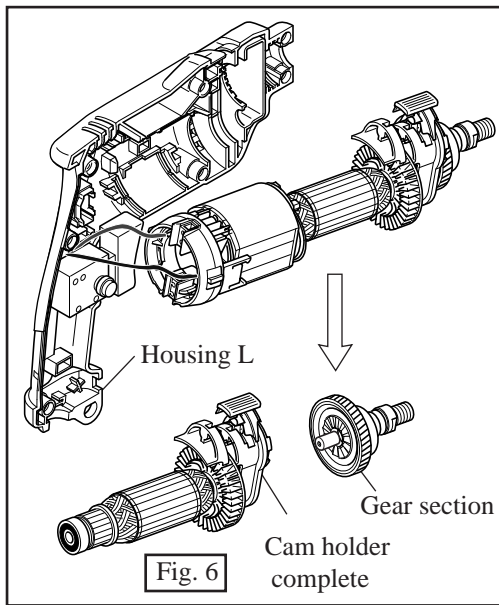


- (3) After removing housing R, take off carbon brushes as illustrated in Fig. 5. Now the inner parts can be removed from housing.

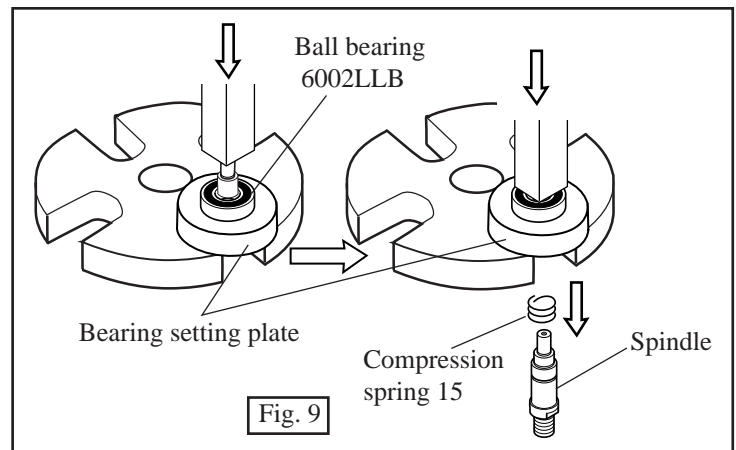
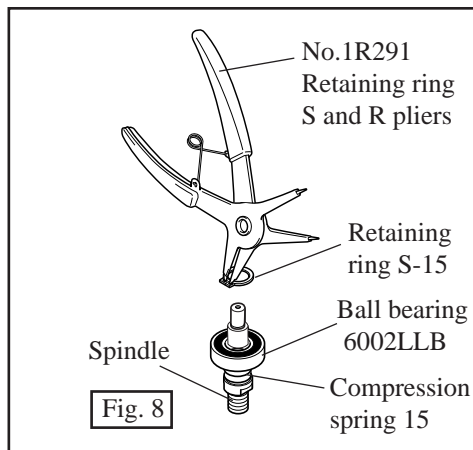


< 5 > Disassembling gear section (spindle, ball bearing 6002 LLB and helical gear 45)

- (1) Take off the inner parts from housing L, and remove gear section from cam holder complete as illustrated in Fig. 6.
- (2) Put the gear section on No.1R165 "Ring Spring Setting Tool" and press the spindle with arbor press. See Fig. 7.

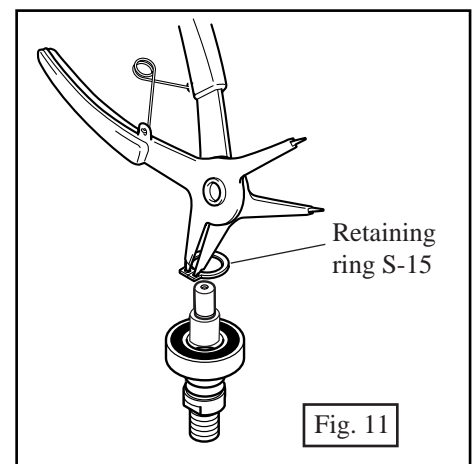
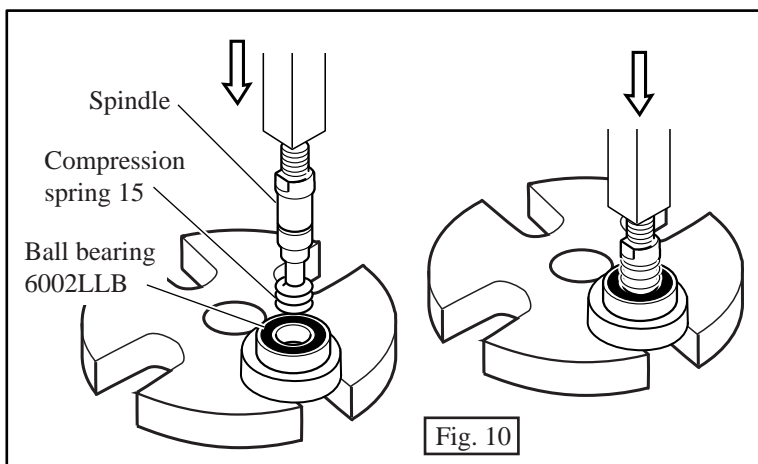


- (3) Remove retaining ring S-15 from spindle. See Fig. 8.
- (4) Remove ball bearing 6002LLB with arbor press. See Fig. 9.
Be careful, not to lose compression spring 15 in this step.

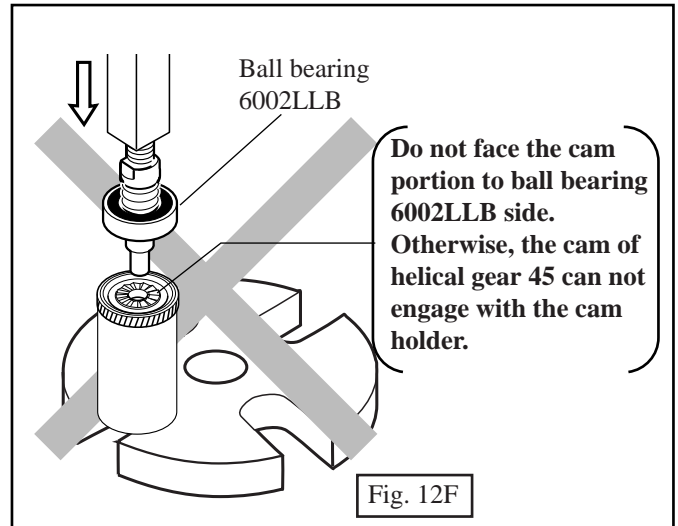
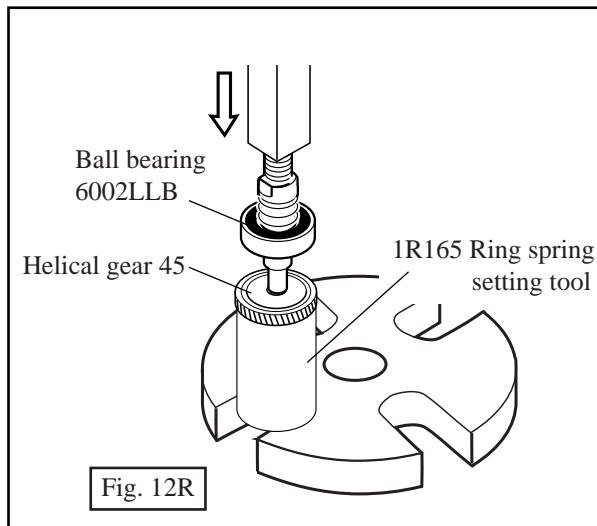


< 6 > Assembling gear section

- (1) After mounting compression spring 15 to spindle, mount the spindle with compression spring 15, to ball bearing 6002LLB by pressing with arbor press. See Fig. 10.
- (2) Mount retaining ring S-15 to the spindle for securing ball bearing 6002 LLB and compression spring 15. See Fig. 11.



(3) Mount the spindle to helical gear 45 as illustrated in Fig. 12R.

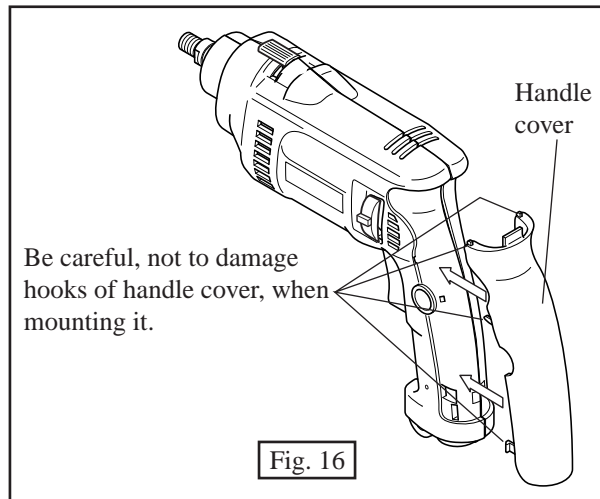
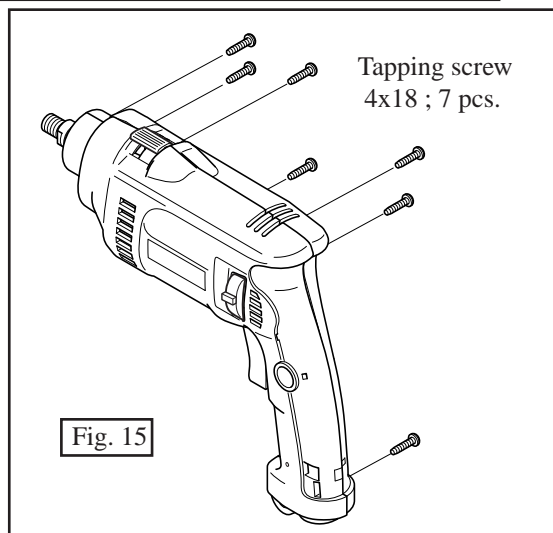
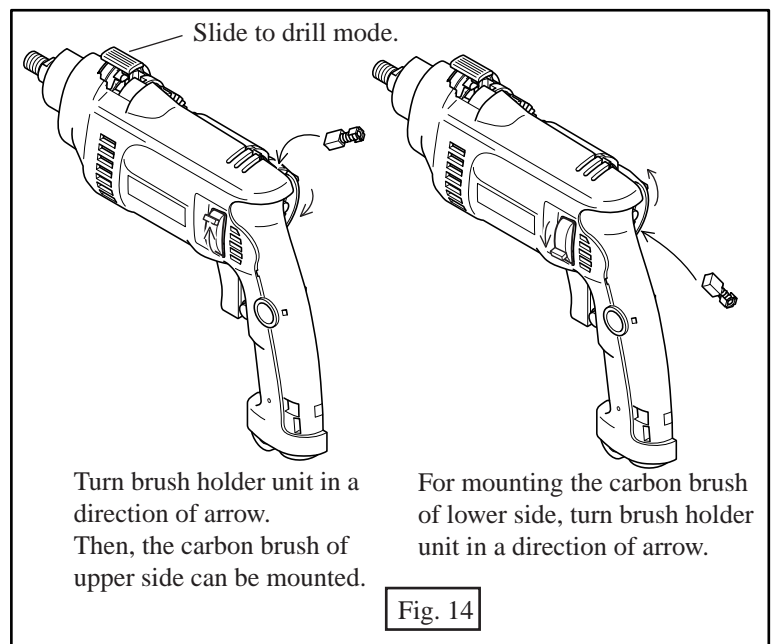
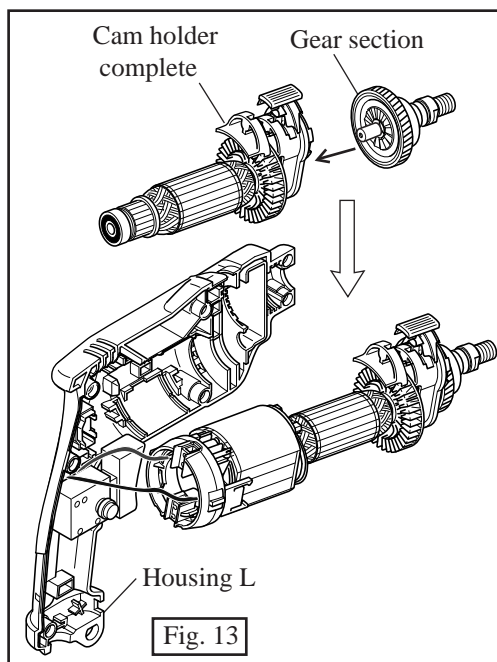


(4) Mount the gear section to cam holder complete. And mount the inner parts to housing L as illustrated in Fig. 13.

(5) Slide change lever to drill mode, and mount carbon brushes. See Fig. 14.

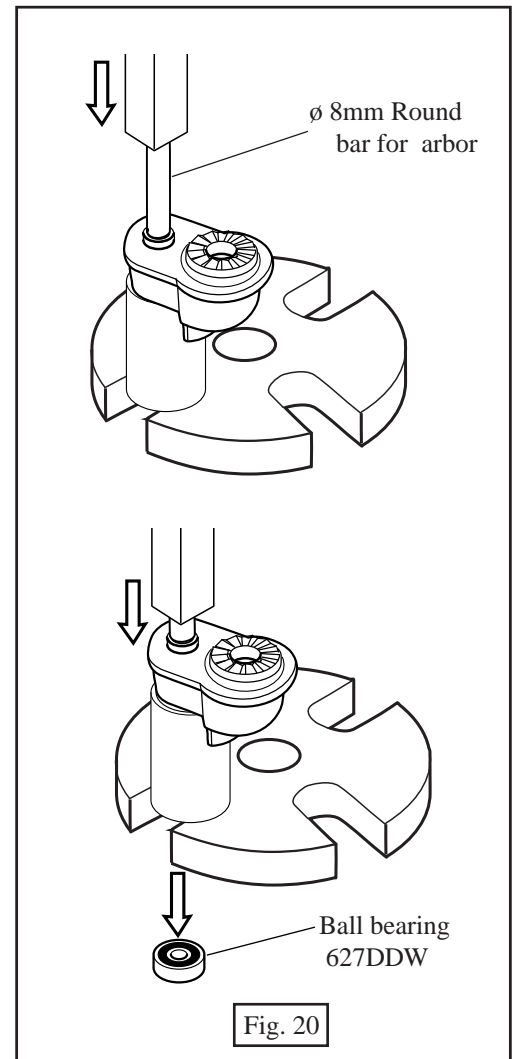
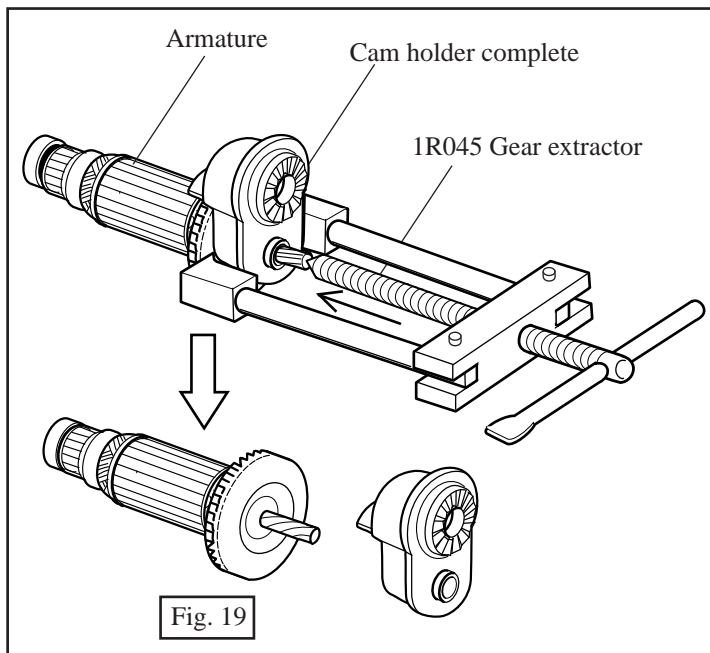
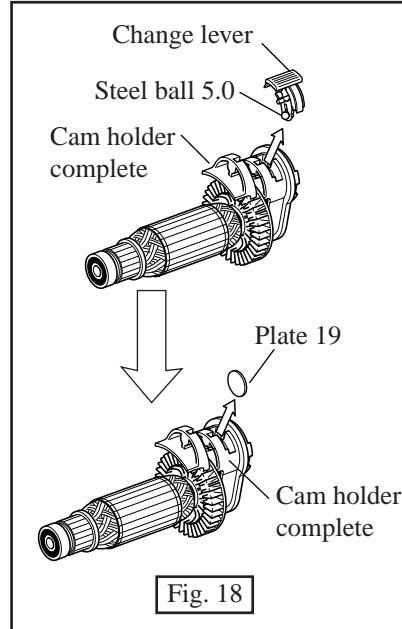
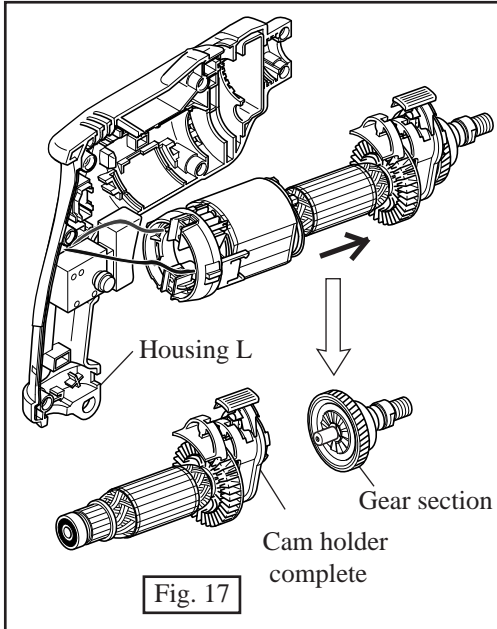
(6) Secure housing R with 7 pcs. of tapping screw 4 x18. See Fig. 15.

(7) Mount handle cover to the housing. See Fig. 16.



< 7 > Removing armature

- (1) After removing inner parts, separate gear section from cam holder complete. See Fig. 17.
- (2) Pull off change lever with steel ball 5.0 from cam holder complete. Remove plate 19. See Fig. 18.
- (3) Remove armature from cam holder complete as illustrated in Fig. 19.
- (4) Remove ball bearing 627DDW from cam holder complete as illustrated in Fig. 20.

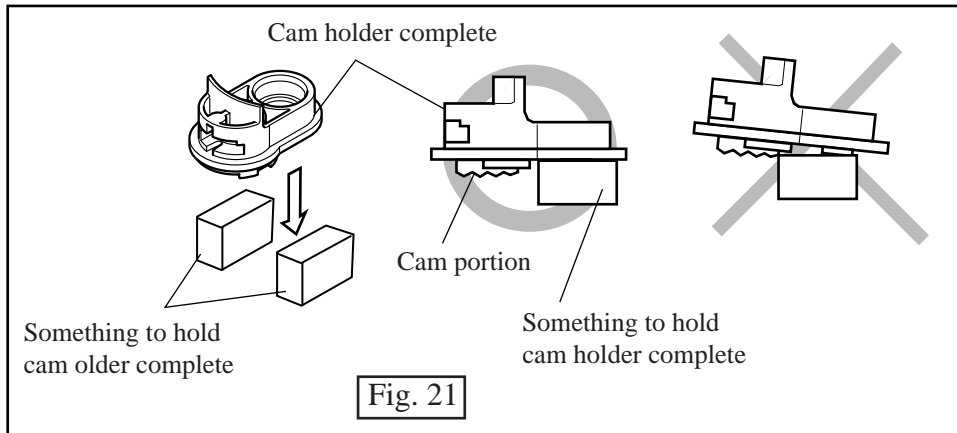


< 8 > Mounting armature

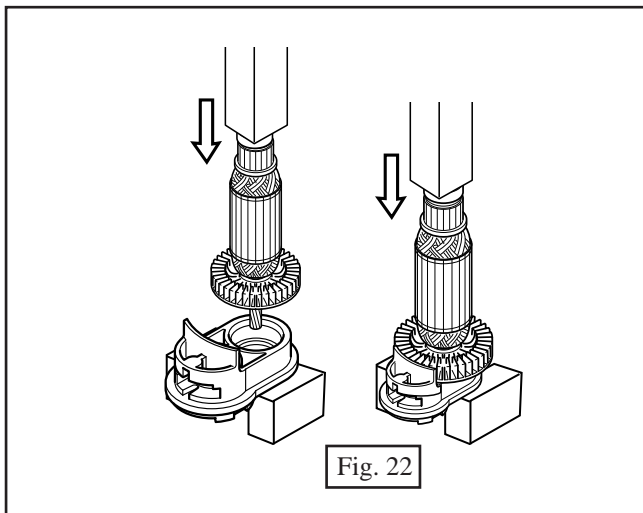
(1) Hold cam holder complete as illustrated in Fig. 21.

< Note >

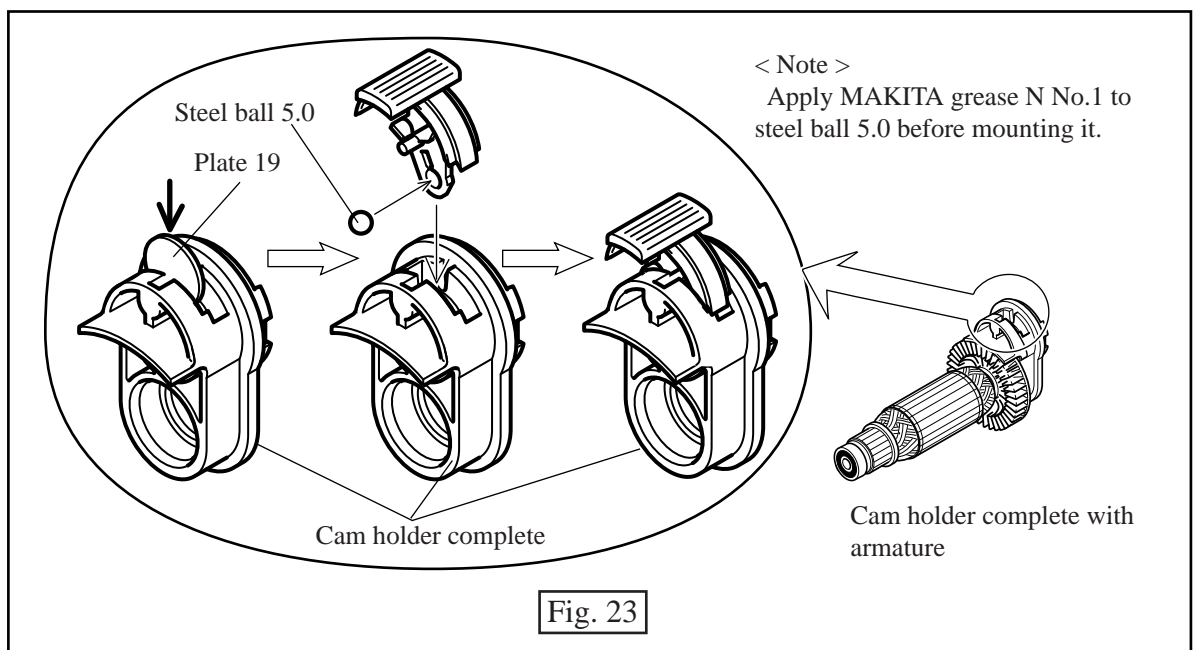
The cam portion has not to come on the supporter. Otherwise, it is impossible to hold cam holder complete horizontally.



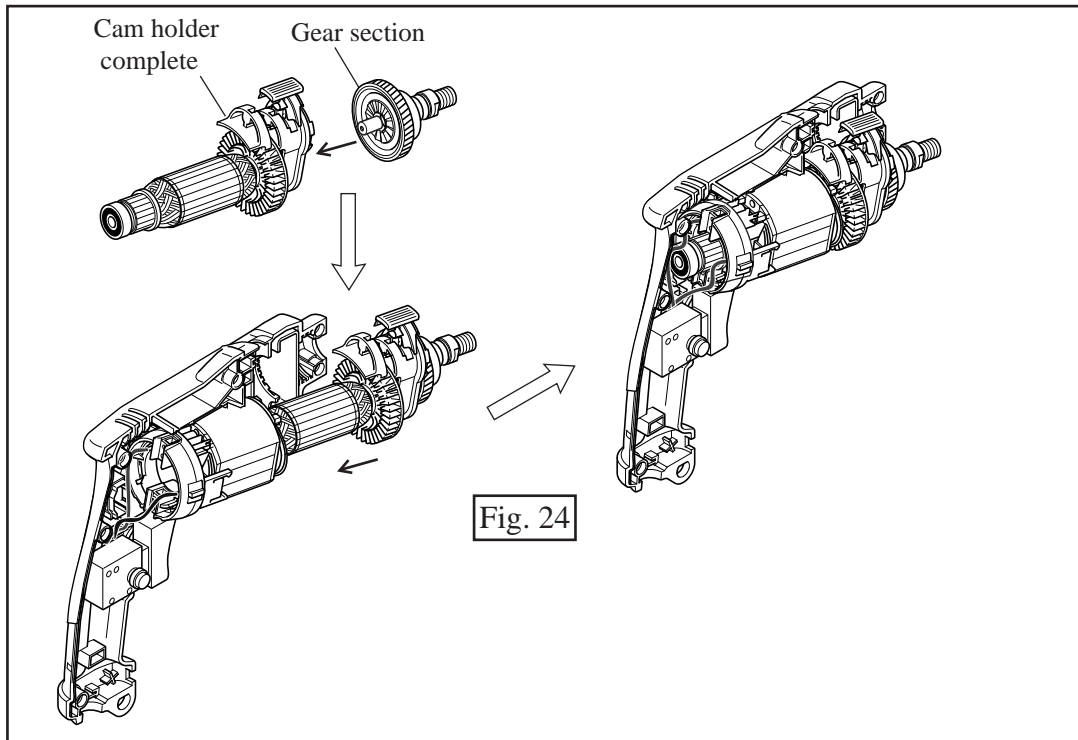
(2) Mount armature assembly to cam holder complete by pressing with arbor press. See Fig. 22.



(3) Mount plate 19 to cam holder complete. After mounting steel ball 5.0 to change lever, push the change lever into cam holder complete. See Fig. 23.



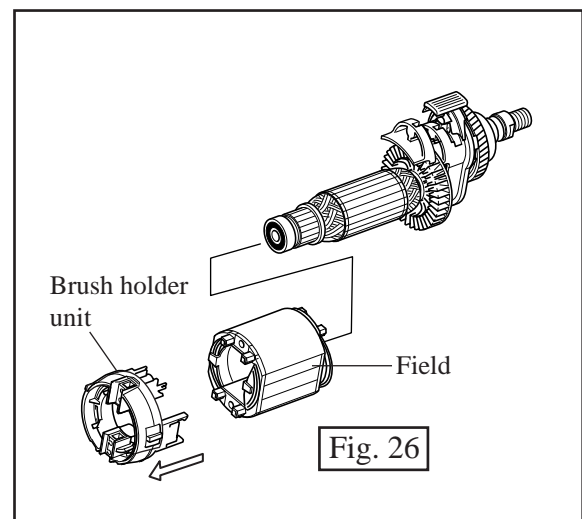
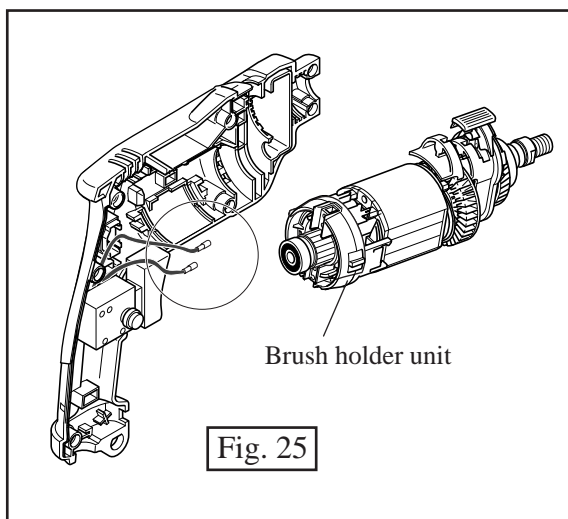
- (4) Mount gear section to cam holder complete to which armature has been mounted. And mount them to housing L together with field and brush holder unit . See Fig. 24.



- (5) Mount housing R in the order of Fig. 14, 15 and Fig. 16. See page 7.

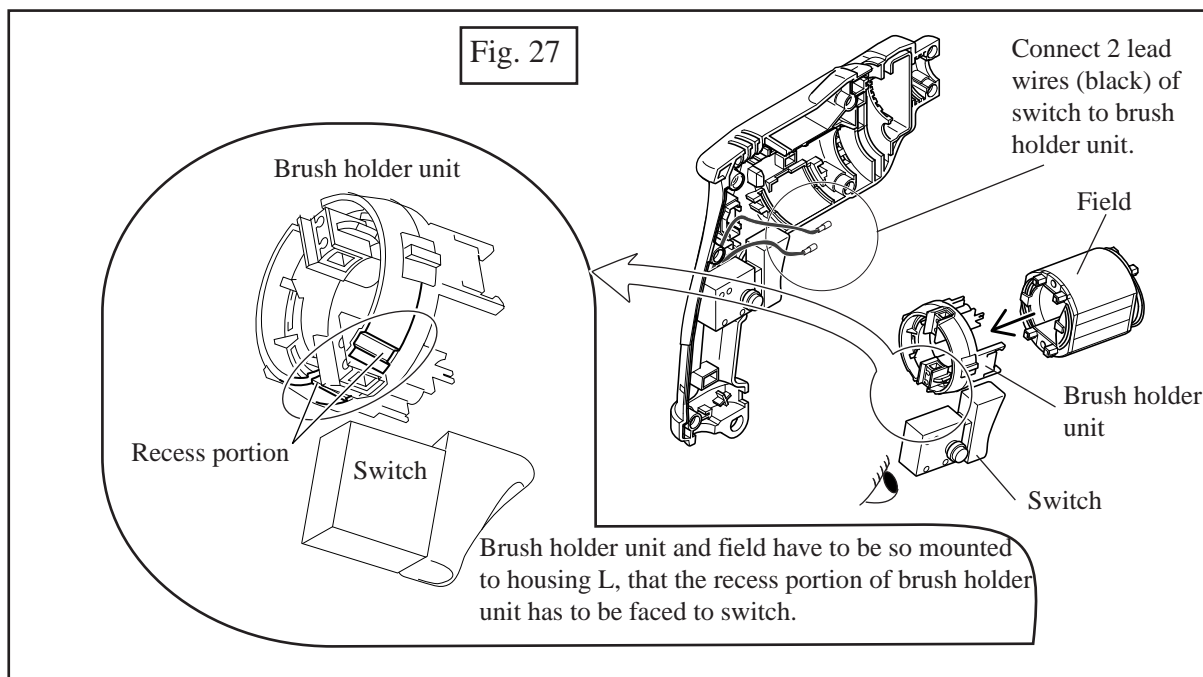
< 9 > Removing field and brush holder unit

- (1) Disconnect 2 lead wires (black) from brush holder unit. And remove inner parts from housing L. See Fig. 25.
 (2) Remove armature, cam holder complete and gear section. See Fig. 26.
 (3) Pull off brush holder unit from field. See Fig. 26.

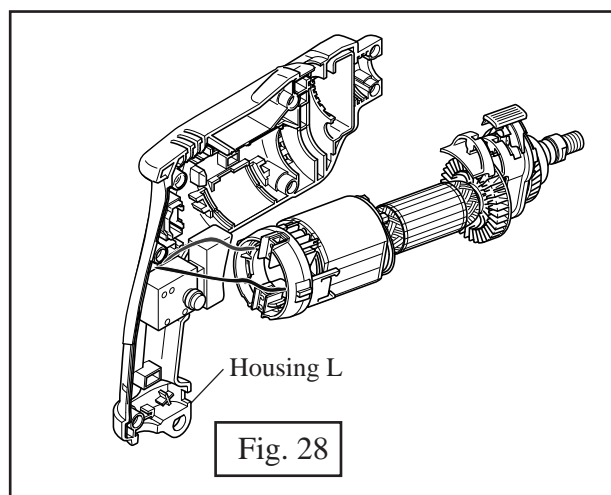


< 10 > Mounting field and brush holder unit

- (1) After connecting brush holder unit with field, mount them to housing L. And connect 2 lead wires (black) of switch to brush holder unit as illustrated in See Fig. 27.







- (2) Mount armature, cam holder complete and gear section by passing through field and brush holder unit. See Fig. 28.



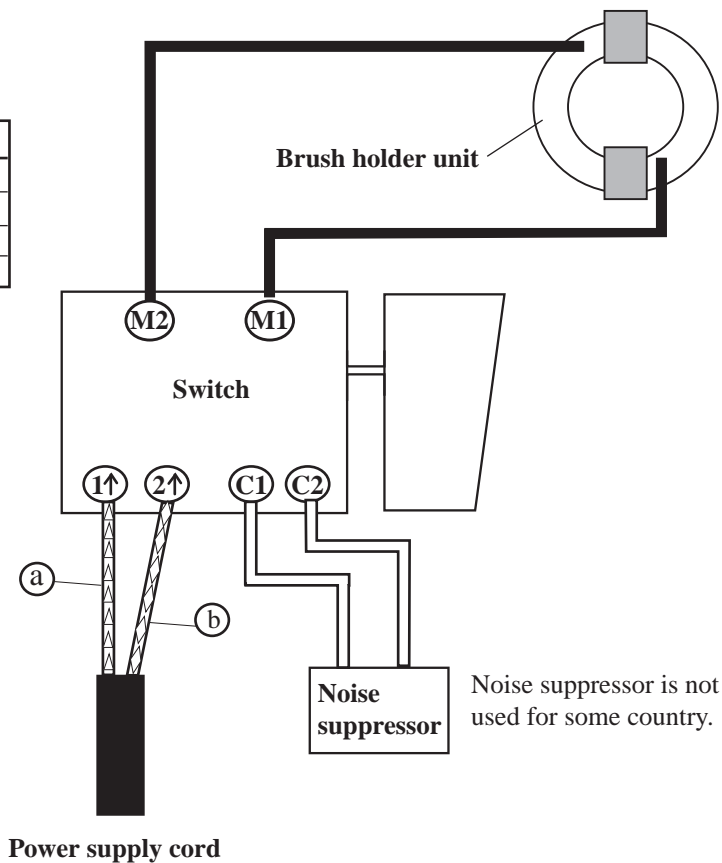
- (3) Mount housing R in the order of Fig. 14, 15 and Fig. 16. See page 7.

▶ Circuit diagram

Model HP1620 and HP1621
without LED job light

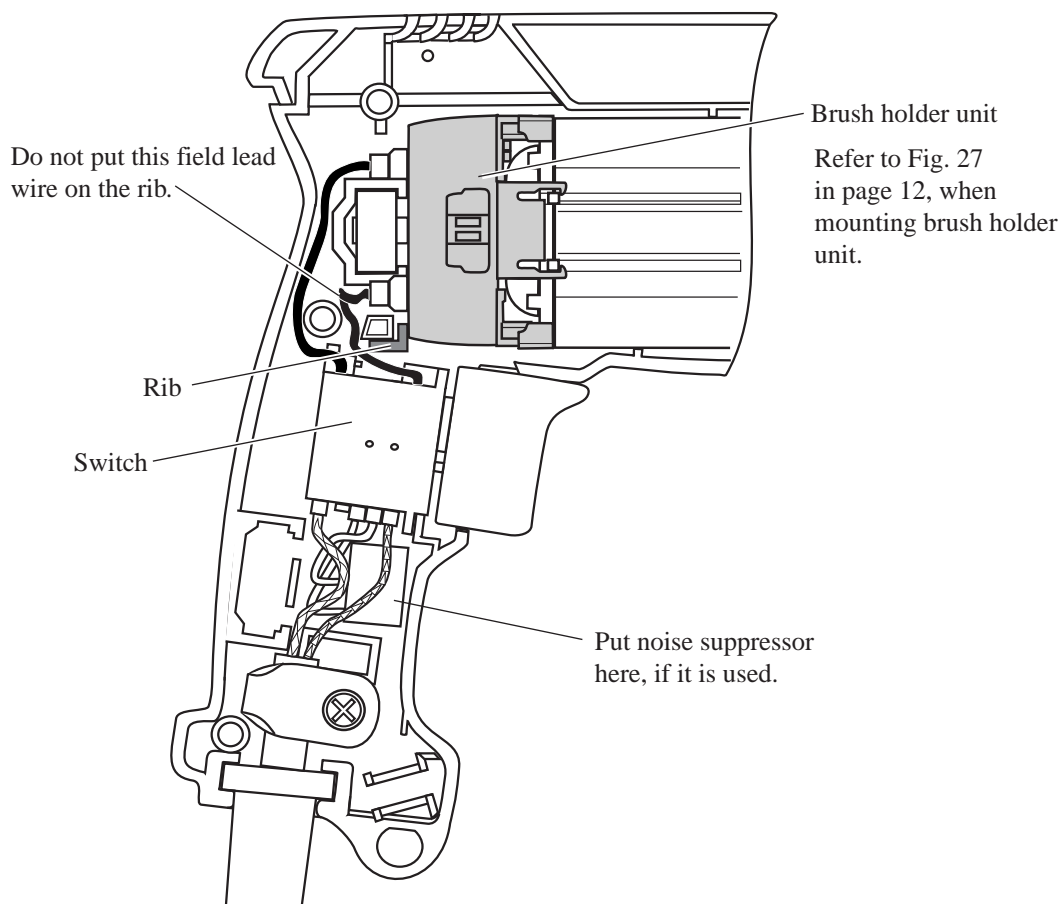
Color index of lead wires' sheath	
Black	
White	
Blue	
Brown	

- (a): Black lead wire can be used for some country instead of brown.
- (b): White lead wire can be used for some country instead of blue.








▶ Wiring diagram

Model HP1620 and HP1621
without LED job light

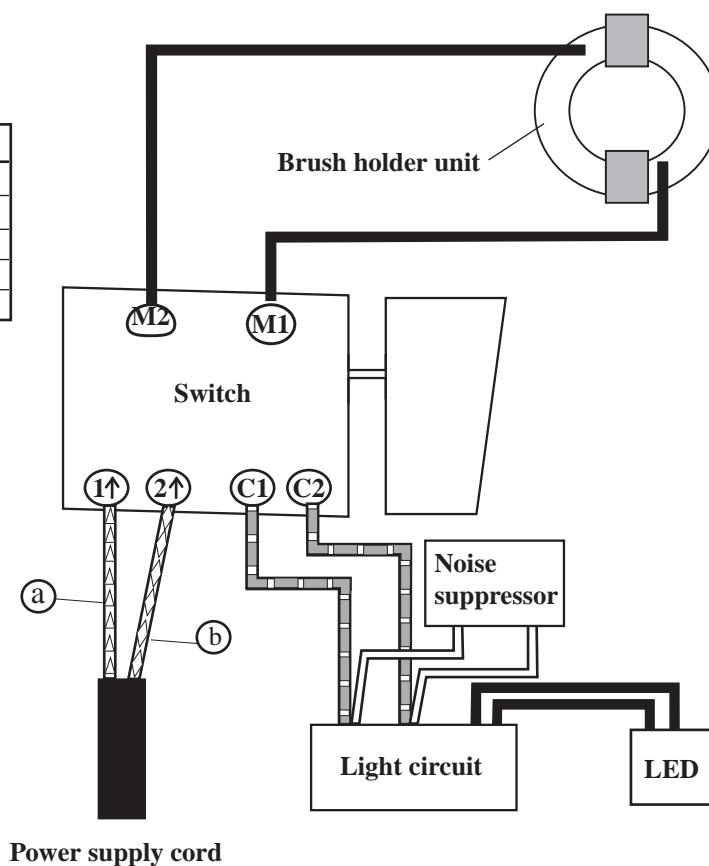


▶ Circuit diagram

Model HP1620F and HP1621F
with LED job light

Color index of lead wires' sheath	
Black	
White	
Blue	
Brown	
Red	

- (a): Black lead wire can be used for some country instead of brown.
- (b): White lead wire can be used for some country instead of blue.



▶ Wiring diagram

Model HP1620F and HP1621F
with LED job light

